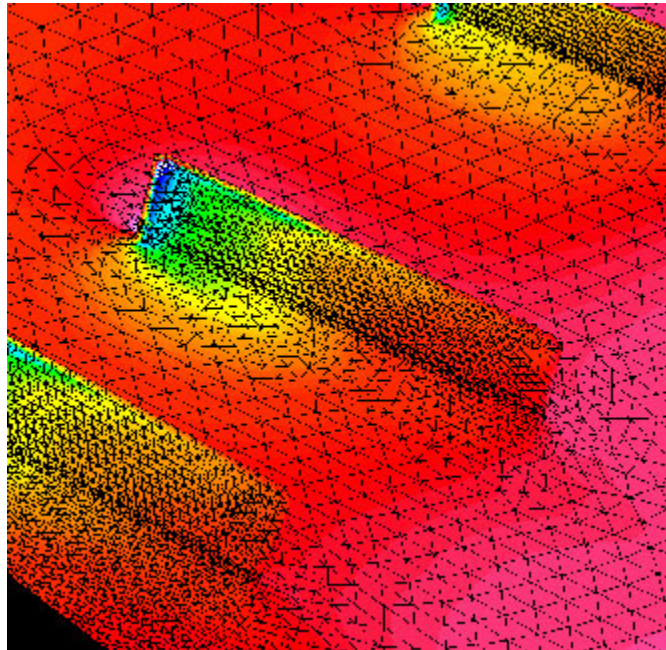


Wind-US 1.0 Released by NPARC Alliance

The NPARC (National Project for Application-oriented Research in CFD) Alliance has released Version 1.0 of Wind-US, the latest in its line of general-purpose, multizone, compressible-flow Navier-Stokes solvers. The NPARC Alliance is a formal partnership between the NASA Glenn Research Center and the Air Force Arnold Engineering Development Center, with additional significant involvement by the Boeing Company's Phantom Works Group, whose mission is to provide an applications-oriented computational fluid dynamics (CFD) system primarily for aerospace flow simulation. The alliance is committed to the long-range maintenance and improvement of this capability, with teams focused on user support, code development, and validation.



Wind-US unstructured grid computation of surface static pressure in the vicinity of vane effectors in a diffusing S-duct.

Wind-US now supports unstructured and hybrid structured-unstructured grids, in addition to the widely used structured grid capability in previous Wind versions. The addition of the unstructured and hybrid grid capabilities significantly decreases the time required for surface and volume grid generation, especially for complex geometric configurations.

Wind-US can be used to analyze steady or unsteady flow for a wide range of geometric configurations and over a wide range of flow conditions. A variety of gas models are available, allowing computation of flows with nonperfect gases and chemical reactions. Several turbulence models are available for Reynolds-averaged Navier-Stokes (RANS) calculations, and a hybrid RANS/LES (large eddy simulation) capability was recently added. Wind-US can be run in serial mode or in a fault-tolerant parallel-processing mode

on a multiprocessing system or heterogeneous workstation cluster. In addition to Wind-US itself, a variety of preprocessing and postprocessing tools are included for setting boundary conditions, examining computed results, and other tasks. Computational platforms supported include HP (Hewlett-Packard Company, Palo Alto, CA), SGI (Silicon Graphics, Inc., Mountain View, CA), Sun (Sun Microsystems, Inc., Santa Clara, CA), and Linux.

Extensive Web sites are maintained by the NPARC Alliance, providing code documentation and validation data. The documentation includes user-level manuals describing the operation and use of Wind-US and its associated utilities, and developer-level reference material intended for those interested in modifying or extending the code. The validation site, which contains detailed examples showing the use of Wind-US for a variety of flows and geometries, serves as an archive of analytical, experimental, and computational data suitable for CFD code validation.

All NPARC Alliance software is available free to U.S.-owned companies, public and private universities, and government agencies, for use by U.S. citizens and resident aliens. Instructions for obtaining the code are available at the NPARC Alliance homepage, or from the NPARC Alliance User Support team. Since its initial release in 1998, the Wind code has been acquired by over 300 different organizations, making it one of the most widely used aerospace flow-simulation packages in the United States.

Find out more about this research:

NPARC Alliance at <http://www.arnold.af.mil/nparc/>

Wind-US documentation at <http://www.grc.nasa.gov/WWW/winddocs/>

NPARC's CFD Verification & Validation site at

<http://www.grc.nasa.gov/WWW/wind/valid/>

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Headquarters program office: Aeronautics Research

Programs/Projects: UEET, HPCCP, PR&T

Special recognition: 1999 NASA Software of the Year, Honorable Mention; 2004

NASA Software Release Award